Amendement to the Specification:

Page 3 Please amend second full paragraph as follows:

US patent 3,967,594 and US patent [3,006,901] 3,996,901 disclose rotary piston machines [havin] having an oval piston in an oval chamber. In this design, the cross section of the piston is bi-oval. This bi-oval piston is movable in a tri-oval chamber. In this prior art rotary piston machine, expensive transmissions are provided, in order to transmit the rotary movement of the rotary piston to the driving or driven shaft.

Page 11 Please amend the first full paragraph as follows:

In Fig. 1 the housing of a rotary piston machine is designated by 30. This housing 30 forms a prismatic chamber 32. The cross section of this chamber is an oval of third order. The cross section is composed of three circular arcs 34, 36, 38 having all three the same relatively small radius of curvature and three circular arcs 40, 42, 44 having all three the same relatively large radius of curvature. The circular arcs having a small and a large radius of curvature 34, 36, 38 and 40, 42, 44, respectively are alternating. A circular arc, for example 34 having a small radius of curvature joins a circular arc 40 having a larger radius of curvature counter clockwise in Fig.1. A circular arc 36 of smaller radius of curvature joins the latter and so on. The circular arcs join each other continuously and smoothly [differentiably)] differentially. Accordingly, the inner wall of the chamber is composed of cylindrical inner wall sections, that is three cylindrical wall sections 46, 48 and 50 corresponding to the circular arcs 34, 36 and 38, respectively, designated herein as “first” inner wall sections, and three cylindrical inner wall sections 52, 54 and 56, designated herein as “second wall sections. One can see that the oval and therewith the chamber 32 has a threefold symmetry. There are three symmetry planes angularly offset by 120°. The symmetry planes intersect in [a central] an axis 58.

Page 12 Please amend the first full paragraph from the bottom of the page as follows:

The rotary piston machine illustrated in Fig.1 is an internal combustion engine in which a fuel is ignited and burnt in the working chamber 78 and 80, respectively, of the rotary piston machine. Accordingly, one inlet valve [84, 86 and 88] 82,84 and 86, respectively for feeding the fuel, one outlet valve 90, 92 and 94 and one spark plug 96, 98, and 100 are provided in each of the cylindrical inner wall surfaces 52, 54 and 56, respectively, having the larger radius of curvature, these elements being known technology and, therefore, are illustrated only schematically and symbolically in Fig.1. The spark plugs 96, 98 and 100 are located in combustion chamber cavities 97, 99 and 101 respectively formed in the cylindrical inner wall sections 52, 54, and 56, respectively.

Page 13 Please amend the first full paragraph as follows:

A driving or driven shaft 102 extends centrally through the chamber 32. The driving or driven shaft 102 is mounted in closure pieces of the housing 10 which are not illustrated in Fig. 1. The axis of the driving or driven shaft 102 coincides with the central axis 58. A pinion 104 is located on the driving or driven shaft 102. Instead of one single pinion, two pinions biased in known way may be provided, the pinions suppressing the game from the driving or driven system in co-operation with the counter toothing. A longitudinal aperture [106] 60 extends through the rotary piston 60. The rotary piston 106 has an internal toothing described hereinafter. The large axis of the aperture is extending perpendicularly to the first symmetry plane of the rotary piston 60 into the second symmetry plane. The internal toothing is composed of two concave toothed racks 108 and 110 on opposite longitudinal sides of the aperture 106. The toothed racks 108 and 110 are curved about the cylinder axes of the cylindrical nappe sections 62 and 64, respectively. These cylinder axes define piston-fixed instantaneous axes of rotation 112 and 114, respectively, of the rotary piston 60. Linear toothed racks 116 and 118 are provided at the ends of the aperture 106. They may also be replaced by the convex toothing arcs.

Page 13 Please amend the last paragraph of the page as follows:

In Fig. 4, the rotary piston 60 is located, at the beginning of an interval of movement, in a position in which half of the two cylindrical nappe sections 70 and 72 of the rotary piston are in the inner wall sections 46 and 48, respectively, complementary thereto. The [nappe section] <u>circular arc</u> 66 of larger radius of curvature engages the inner wall section 52 complementary thereto. From this position, the rotary piston is rotating counter clockwise in Fig. 4 about the instantaneous axis of rotation 112. The cylindrical nappe section 70 rotates like in a bearing in the cylindrical inner wall section 46 of the chamber 32 complementary thereto. The cylindrical nappe section 72 slides to the right in Fig. 4 on the inner wall section 54.This rotation about the instantaneous axis of rotation 112 is continued until the rotary piston 60 engages the face of the chamber 32on the right side in Fig. 4. This is a "stop position". Half of the cylindrical nappe section 72 is then located in the inner wall section 50 complementary thereto. The nappe section 68 engages the inner wall section 56. Thus, the rotary movement about the instantaneous axis of rotation 112 is limited. The described movement is an "interval of movement".

Page 15 Please amend the main paragraph on this page (continued on page 16) as follows:

Fig. 4 also shows the trajectory 132 passed by these movements of the rotary piston 60 from the axis 58 of the driving or driven shaft 102 relative to the rotary piston 60 and the aperture 106. This trajectory is a twoangle, i.e. a geometric figure having two oppositely curved circular arcs meeting in two corners. The circular arcs are curved herein about the two possible instantaneous axes of rotation 112 and 114 of the rotary piston 60 and symmetrical to the "transversal" symmetry plane of the rotary piston. In the end position of Fig. 4, the transversal symmetry plane passes through the [center] axis 58. In the "stop position", the [center] axis 58 is located on one of the corners of the twoangle on the transversal symmetry plane. The curvature of the circular arcs depends on the position of the axes of rotation 112, 114 relative to this transversal symmetry plane and therewith on the radius of curvature of the two nappe sections 70 and 72. The toothed racks 108 and 110 are also curved about the possible instantaneous axes of rotation 112 and114, respectively. Their distance from the two

circular arcs 134 and 136, respectively, is equal to the radius of the pinion 104. In the stop position there will be a jump of the instantaneous axis of rotation from for example 112 to 114. When the rotary piston 60 is rotating during one interval of movement for example about the instantaneous axis of rotation 112, then the axis 58 of the driving or driven shaft 102 is moving on the circular arc 134 of the trajectory 132, and the pinion 104 engages the concave toothed rack 108. After having reached the stop position the instantaneous axis of rotation jumps as illustrated in Fig. 5. The rotation is now effected about the instantaneous axis of rotation 114. The axis 58 of the driving or driven shaft 102 is then in one corner of the twoangle and is moving in the next interval of movement along the circular arc 136. Correspondingly, the pinion 104 then must engage the concave toothed rack 110 curved about the instantaneous axis of rotation 114. In the stop position the circumference of the pinion must join the concave toothed racks 108 and 110 continuously and smoothly. However, the transmission of the pinion 104 from one toothed rack to the other 108 resp. 110 must be realised without blocking. This would be the case, if the toothed racks would form an oval of second order in total with the radius of curvature about the instantaneous centers of rotation and the radius of curvature of the gearwheel. For this reason, the odd or linear tooth racks 116 and 118 are provided at the ends of the aperture 106. Also convex toothed racks (toothed bars) might be provided instead of linear toothed racks 116 and 118. There are gaps between the concave toothed racks 108 and 110 and the linear or convex toothed racks 116 and 118, the pinion 104, however, just coming out of the engagement with the concave toothed rack 108 or 110, when engaging the linear or convex toothed rack 116 or 118. It can be shown that the kinematics is closed and that a safe and correct transition from one concave toothed rack to the other is ensured without interruption of the driving connection.

Page 17 Please amend the last full paragraph on this page as follows:

In a fifth interval of movement, illustrated in Fig.7.9 and 7.10, the rotary piston is again rotated about the instantaneous axis of rotation 112. A working chamber 146 is formed, in which chamber the combustion gases expand and urge the rotary piston 60 further counter clockwise. The working chamber 144 is reduced and the air drawn-off during the fourth interval of movement is compressed. Fuel is injected into the compressed air in the combustion cavity [98] 99 of the working chamber 144 and ignited. The instantaneous axis of rotation jumps again from the axis of rotation 112 to the axis of rotation 114.

Page 20 Please amend the first full paragraph on this page as follows:

Longitudinal grooves [20] <u>200</u> are provided in the cylindrical nappe sections 70 and 72, as illustrated in Fig. 17. Seals [202] <u>120</u> are located in the longitudinal grooves 200. The seals 120 are under the action of compression springs 204 and are urged against the inner wall of the chamber 12. Thereby an additional sealing between the rotary piston 60 and the inner wall of the chamber 12 shall be obtained. Additionally, pressure from one of the working chambers may be applied to the seals, which pressure is introduced into the longitudinal grooves 200 and urges the seals 120 against the inner wall of the chamber 12. Such a pressure force improves the sealing effect, but causes increased friction, having a negative impact on the degree of efficiency and the wear. For this reason, the working chamber pressure is applied through a valve assembly 206 to the longitudinal grooves, the pressure difference between the working chambers for example 78 and 80 being applied to the valve assembly. If the pressure difference is large, the seals are urged against the inner wall of the chamber 12 with a bigger force than in case of a small pressure difference. Thus, a better sealing is achieved with large pressure difference between the working chambers, while accepting increased friction, whereas with small pressure difference a less strong pressure of the seals 120 is sufficient and friction is reduced.

Page 21 Please amend the first full paragraph at the top of this page as follows:

The slide valve [208] <u>210</u> is [centred] <u>centered</u> by non illustrated means such that with low pressure difference between the working chambers 78, 80 it covers the connection to the longitudinal grooves 200. When the pressure difference between the working chambers exceeds a determined measure, the slide valve 208 is moved by the pressure difference in one of its end positions, in which the respective section [313] <u>214</u> or 216 engages the associated closure piece. Then, a connection between the working chamber with higher pressure and the longitudinal groove 200 is established.

Page 21,22 Please amend the paragraph which bridges pages 21 and 22 as follows:

Another solution is shown by Figs. 19A and 19B. Therein, a seal 226 is shown, the seal having a convex profile 228. The profile 228 is subdivided into three notional longitudinal strips 230, 232 and 234. The radius of curvature of the profile in the two outer longitudinal strips 230 and 234 is equal to the smaller radius of curvature of the inner wall sections 46, 48, 50. The radius of curvature of the profile in the central longitudinal strip 232 is equal to the larger radius of curvature of the inner wall sections 52, 54, 56. When the seal 226 engages an inner wall section 46, 48, 50 with smaller radius of curvature the two outer longitudinal strips 230 and 234 are in surface contact with the inner wall section, for example 46. This is illustrated in Fig.19A. When the seal 226 engages an inner wall section 52, 54, 56 with larger radius of curvature, then the seal in the central longitudinal strip [238] 232 has surface contact with the inner wall section, for example 52.

Page 22 Please amend the last paragraph on this page as follows:

The chamber 252 [ha] has a fivefold symmetry, i.e. there are five symmetry planes extending through the cylinder axis of an inner wall section of smaller radius of curvature and the cylinder axis of the opposite inner wall section of larger radius of curvature. The symmetry planes intersect in a center axis 294. The rotary piston 276 only has a twofold symmetry: the two symmetry axes pass on the one hand through the cylinder axes of the opposite cylindrical nappe surfaces 278 and 278 and on the other hand through the cylinder axes of the opposite cylindrical nappe sections 280 and 284.